Illinois Tool IV

PATENT SPECIFICATION

(54) MASONRY ANCHOR DEVICES

(71)   We, ILLINOIS TOOL WORKS INC., a corporation organized under the laws of the State of Delaware, United States of America, of 8501 West Higgins Road, Chicago, Illinois 60631, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

In the attachment of panels, supports, channels or other workpieces to a masonry-like structure, it is commonplace to utilize a stud anchor which incorporates a wedging mechanism. Such devices frequently require a manipulation of the wedge to properly set the device within the bore and will also require a secondary fastener member, such as a nut, to be placed over the workpiece and tightened on the stud. Removability when desired, is a major problem when using the prior art devices.

It is a primary object of the invention to provide an anchor device which can be readily inserted, in a bore formed in a masonry structure, by a rotary motion, thus allowing conventional threaded fastener driving tools to be used.

Another object of the invention is to provide a rotary fastener type anchor device which can be inserted and embedded in a masonry-like structure with a minimal amount of torque.

Yet another object of this invention is to provide a one-piece masonry anchor which can be inserted through a workpiece into and anchored in the masonry structure in a single operational step.

The features of the present invention are defined in the claims.

The anchor devices of the present invention eliminate many of the deficiencies of prior art devices and provide a simple, one-piece, easily installed fastener which will not require a secondary operation to secure a workpiece to a support structure of masonry.

An advantage of the anchor devices of the present invention is that they provide for firm embedding of a helical thread without appreciably disturbing the wall structure of the bore adjacent the embedding.

A further advantage of the anchor devices of the present invention is the ability to utilize dust and aggregate particles removed during embedding to further enhance the pull-out strength of the anchor device.

The accompanying drawings show two examples of anchor devices embodying the present invention. In these drawings:—

Figure 1 is a diagrammatic side elevation of one anchor device;

Figure 2 is an enlarged partial side elevation of this device;

Figure 3 is a partial sectional view showing the anchor device embedded in a masonry-like structure;

Figure 4 is a cross-section taken along the line 4-4 of Figure 2; and

Figure 5 is a partial side elevation showing a modified form of anchor device.

The anchor device 10 shown in Figures 1 to 4 includes an enlarged head 12 with appropriate rotation inducing surfaces 14, and an elongated shank 16 with a substantially pointed entering extremity 18. A sharp-crested helical thread 20 is formed along the length of the shank, providing a first plurality of convolutions, and a helical protuberance 22 is formed along the length of the shank, spaced between adjacent convolutions of the thread 20 and providing a second plurality of convolutions. The thread 20 and helical protuberance 22 have substantially the same pitch. The crest of the protuberance 22 is at a uniform radial distance from the axis of the shank.

A plurality of notches 26 are formed in the crest of the helical thread 20. These notches lie along lines which extend from the entering extremity of the shank towards